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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,866	10/23/2003	Paul A. Ward	(CSDL-0639CN) 082278-0235	6735
48329 7590 04/16/2007 FOLEY & LARDNER LLP 111 HUNTINGTON AVENUE 26TH FLOOR BOSTON, MA 02199-7610			EXAMINER CORRIELUS, JEAN B	
			ART UNIT	PAPER NUMBER
			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/16/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/691,866

Applicant(s)

WARD ET AL.

Examiner

Jean B Corrielus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-26,36,41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-26,36,41 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/27/07 has been entered.

Response to Arguments

2. Applicant argues that one skill in the art would not be motivated to combine the teaching of Birgenheier, a (RF) communication device with the teaching of Bonta, inferring that the two references are not in the same field of endeavor. Such point of argument is persuasive the outstanding art rejection has been withdrawn. However, after further consideration, a new ground of rejection is made in view of White and Sonnichsen et al. See below.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "object" as recited in claims 36 and 42, (in other words, the drawing does not show any object being measured) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 24-26, 36, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over White US Patent No. 5,893,054 in view of Sonnichsen et al US Patent No. 6,456,945 and further in view of applicant's disclosure page 12, lines 9-17.

As per claim 24, Birgenheier et al teaches figs. Fig. 2, 14, 32 and 33 a vibratory accelerometer see fig. 14 and col. 6, lines 5-6 which produces a sinusoidal signal in response to measurement of a parameter see abstract, line 1; an analog to digital converter 141 which receives said analog signal and converts the analog signal to a digital signal; a Hilbert transformer approximation device fig. 18 which receives said digital signal and produces the quadrature component of said digital signal by introducing a phase shift to said digital signal see output of 194, and output of 191 the inphase signal corresponds to the output of the A/D converter see col. 22, lines 38-43; an amplitude computation device which receives said I and Q components and computes the instantaneous amplitude of said digital signal according to $a = \text{SQRT}(Q^2 + I^2)$ see col. 21, lines 54-60 and col. 22, lines 43-45; White does not explicitly teach a phase computation device which receives said I and Q components and computes the instantaneous phase of said digital signal according to $\theta = \text{ARCTAN}(Q/I)^{-1}$. It further fails to teach a CORDIC processor is used to compute the phase and amplitude signal. However, as evidence by Connichsen et al it is well known in the art to measure the phase and amplitude of a digital signal using a phase computation device and an amplitude computation devices, respectively, see fig. 1C elements 36C and 38D. Given that fact, it would have been obvious to one skill in the art to modify white by inserting a phase computation device taught by Connichsen to compute the phase of the digital signal based on $\theta = \text{ARCTAN}(Q/I)^{-1}$ in order to provide proper indication of direction of the vibrating signal so as to adjust system parameter so as to counteract the effect of such vibration. In addition, Furthermore, at page 12, lines 9-17, applicant acknowledges

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that a CORDIC processor is a well known device used in signal processing for fast digital trigonometric computations. Given that it would have been obvious to one skill in the art to incorporate such a teaching in White and Connichsen in order to perform fast digital trigonometric computations.

As per claim 25 the Hilbert transformer see, for instance fig. 18, introduces a predetermined delay into said quadrature component 192.

As per claim 26, the system further includes a delay device 191 which introduces said predetermined delay into said I component.

As per claim 36, see claim 24. In addition, White teaches a filter 143 to attenuate out of band noise in said signal and a further includes a delay device 191 which introduces said predetermined delay into said I component.

As per claim 41, see claim 24. In addition, note that the analog signal generated by White inherently includes both a phase and an amplitude of said parameter.


As per claim 42, see claim 24. In addition, Birgenheier teaches a filter 143 to attenuate out of band noise in said signal and a further includes a delay device 191 which introduces said predetermined delay into said I component and the analog signal inherently includes both a phase and an amplitude of said parameter.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean B Corrielus
Primary Examiner
Art Unit 2611
4-12-07